

Appl. No. N/A

Preliminary Amendment dated: July 19, 2004

Amendments to the Specification:

Please replace the first paragraph beginning on page 88 and ending on page 89 with the following amended paragraph:

In the present embodiment, when the first movement detection section 106 detects the movement of the object 110 in the course of the reach control mode 521, the control section 104 shifts from the reach control mode 521 to ~~the first output fixation mode 1021~~ the first output fixation mode 523. In another embodiment, instead of this, the control method as mentioned below is carried out. In the reach control mode, the first storage section 107 stores the output value of the output detection section 103 (or the control value) before the first movement detection section 106 detects the movement of the object 110. When the first movement detection section 106 detects the movement of the object, the control section 104 shifts to the stable control mode where the value derived based on the output value of the output detection section 103 (or the control value) (which is the maximum value in the range of the output value at which the object does not move) stored by the first storage section 107 at the previous time (the derived value may be the maximum value itself or may be the value obtained by subtracting a predetermined correction value from the maximum value) is set as a target output. As a result, the effect which is similar to that in Embodiment 1 can be obtained.

Please replace the first paragraph beginning on page 93 and ending on page 94 with the following amended paragraph:

At step 715, the control section 104 increases the control value (power) P by the predetermined value $\Delta P1$. The inverter circuit 102 applies the power (indicated as power P) corresponding to the control value P (which sets the conditions for driving the induction heating coil 101 (such as a frequency and a driving time ratio)) to the induction heating coil 101 (step 716). The first movement detection section 106 checks whether or not the object has moved (~~step 723~~) (step 717). If the object has moved, the sequence returns to step 709 and the first output

fixation mode 732 is carried out. If the object has not moved, the value P (the control value of the control section 104) is stored in the first storage section 107 (step 718).

Please replace the second paragraph beginning on page 96 and ending on page 97 with the following amended paragraph:

In the present embodiment, when the first movement detection section 106 detects a movement of the object 110 in the course of the reach control mode 521, the control section 104 shifts from the reach control mode 521 to ~~the first output fixation mode 1021~~ the first output fixation mode 723. In another embodiment, when the first movement detection section 106 detects the movement of the object in the reach control mode, the control section 104 shifts to the stable control mode where the value derived based on the output value of the output detection section 103 (which is the maximum value in the range of the output with which the object does not move) stored by the first storage section 107 at the previous time (the derived value may be the maximum value itself, or may be the value obtained by subtracting a predetermined correction value from the maximum value) is set as a target output. By alternating between the stable control mode and the reach control mode afterwards, the effect which is similar to that in Embodiment 2 can be obtained.

Please replace the first paragraph beginning on page 97 and ending on page 99 with the following amended paragraph:

<<Embodiment 3>>

With reference to FIG. 1 to FIG. 4, FIG. 9 and FIG. 10, an induction heater (induction heating cooker) in accordance with Embodiment 3 of the present invention will be described. FIG. 9 shows a block diagram of the induction heater in accordance with Embodiment 3. The induction heater in accordance with Embodiment 3 has a second storage section 901 in addition to the configuration in accordance with Embodiment 1 (FIG. 1). The second storage section 901 stores the

power source current of the inverter circuit 102 detected by the output detection section 103 (which is equivalent to the output value of the inverter circuit 102) in the first output fixation mode. Otherwise, the induction heater ~~in accordance with Embodiment 2~~ in accordance with Embodiment 3 has the same block configuration and the same structure as those of the induction heater in accordance with Embodiment 1 (FIG. 1) (FIG. 2 to FIG. 4). The specific circuit of the inverter circuit 102, the output detection section 103, the induction heating coil 101 and so on in accordance with Embodiment 3 is the same as that in accordance with Embodiment 1 (FIG. 2). The microcomputer 112 has the control section 104, the first movement detection section 106, the first storage section 107, and the second storage section 901. In the present embodiment, the first storage section 107 and the second storage section 901 are internal RAM of the microcomputer 112. The first storage section 107 and the second storage section 901 may be different memory chips or may be different storage areas in one and the same memory chip. The descriptions of the same blocks as those in accordance with Embodiment 1 are omitted.

Please replace the first paragraph beginning on page 114 and ending on page 115 with the following amended paragraph:

<<Embodiment 5>>

With reference to FIG. 12 to FIG. 14, an induction heater (induction heating cooker) in accordance with Embodiment 5 of the present invention will be described. The induction heater in accordance with Embodiment 5 has a second movement detection section 1201 in addition to the configuration in accordance with Embodiment 4 (FIG. 9). When the first movement detection section detects a movement of the object 110 a plurality of times (for example, ten times) in a row in the output fixation mode, the second movement detection section 1201 determines that the object 110 has moved. Otherwise, the induction heater in accordance with Embodiment 5 has the same block configuration and the same structure as in Embodiment 4 (FIG. 9) (FIG. 2 to 4). The specific circuit of the inverter circuit 102,

the output detection section 103, the induction heating coil 101 and so on in accordance with Embodiment 3 in accordance with Embodiment 5 is the same as in Embodiment 1 (FIG. 2). The microcomputer 112 has the control section 104, the first movement detection section 106, the first storage section 107, the second storage section 901 and the second movement detection section 1201. The first storage section 107 and the second storage section 901 are internal RAM of the microcomputer 112. The first storage section 107 and the second storage section 901 may be different memory chips or may be different storage areas in one and the same memory chip. The second movement detection section 1201 is operated by software. The descriptions of the same blocks as described in Embodiments 1 to 4 are omitted.

Please replace the third paragraph beginning on page 135 and ending on page 136 with the following amended paragraph:

In the present embodiment, the first movement detection section 106 observes the change of the heating coil current with time during the softstart period when heating is started (in the reach control mode) to detect a float or a movement of the object. In ~~the control stability mode~~ the stable control mode, it is possible to measure the induction heating coil current, or another current or voltage associated with the induction heating coil output and observe the change thereof to detect the movement of the object caused by buoyant force.

Please replace the first paragraph beginning on page 137 with the following amended paragraph:

With reference to FIG. 18 and FIG. 19, an induction heater (induction heating cooker) in accordance with Embodiment 8 will be described. The induction heater in accordance with Embodiment 8 has the same block diagram (FIG. 1) and the same structure as those of the induction heater in accordance with Embodiment

7. The induction heater in accordance with Embodiment 7 has the same configuration as that of the induction heater ~~in accordance with Embodiment 7 in accordance with Embodiment 8~~ (FIG. 16, and FIG. 17) except for an operation unit (FIG. 18) and a control method (FIG. 19). Since the basic configuration in accordance with the present embodiment is the same as in Embodiment 7, the different points will be mainly described. The same numerals are applied to the same functions as in Embodiment 7, and the descriptions thereof are omitted.

Please replace the third paragraph beginning on page 210 and ending on page 211 with the following amended paragraph:

FIG. 43 is a view showing a state of the change in the input current of the inverter circuit 102 when the movement detection section 4006 is stopped by a stop command input from the movement detection stop input section 4001. The horizontal axis indicates the time from when output is started, while the vertical axis indicates the input current. As shown in FIG. 43, when a movement of the object is caused, the input current varies according to the change of the magnetic coupling between the object, which is a load, and ~~the induction heating coil 4~~ the induction heating coil 101.

Please replace the first paragraph beginning on page 224 with the following amended paragraph:

~~At step 4405~~ At step 4905, it is checked whether or not the induction heater is currently in the output fixation mode. If it is not currently in the output fixation mode, the sequence proceeds to step 4907. If it is currently in the output fixation mode, the sequence proceeds to step 4906.

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Please replace the second paragraph beginning on page 224 with the following amended paragraph:

~~At step 4406~~ At step 4906 (output fixation mode), the control section 4004 outputs a predetermined control value. The inverter circuit 102 applies the predetermined level of power to the induction heating coil 101. The sequence returns to step 4901.

Please replace the third paragraph beginning on page 224 and ending on page 225 with the following amended paragraph:

~~At step 4407~~ At step 4907, it is checked whether or not the movement detection section 4006 has detected a movement of the pan (object to be heated). If the movement of the pan (object to be heated) has been detected, the power to be applied to the induction heating coil 101 is reduced step by step (the power may be sharply reduced) (step 4909). The sequence returns to step 4901. At step 4909, for example, the inverter circuit may be stopped, the control which is similar to that in the first output fixation mode in accordance with Embodiment 1 may be performed, or the control in the stable control mode (where the control is exercised so that the output of the inverter agrees with a target output) may be performed with the output of the inverter with which the pan does not move as a target output.

Please replace the first paragraph beginning on page 225 with the following amended paragraph:

~~At step 4407~~ At step 4907, if the movement of the pan (object to be heated) has not been detected, the power to be applied to the induction heating coil 101 is changed step by step, whereby a target level of power is applied to the induction heating coil 101 (step 4908). The sequence returns to step 4901.

Please replace the first paragraph beginning on page 231 with the following amended paragraph:

FIG. 52 is a flowchart showing a control method of the induction heater in accordance with Embodiment 19. With reference to FIG. 52, the control method of the induction heater in accordance with Embodiment 19 will be described. ~~At step 5121~~ At step 5201, it is checked whether or not the output fixation key switch (output fixation input section) 4701 is ON. If the output fixation key switch 4701 is in a state of being pushed, the sequence proceeds to step 5202. If it is not being pushed, the sequence proceeds to step 5203.

Please replace the first paragraph beginning on page 233 with the following amended paragraph:

The output fixation input section 4701 in accordance with Embodiment 19 may be replaced with the movement detection stop input section. If the user continues to input the movement detection stop command through the movement detection stop input section (for example, if the user continues to push the key switch which is a movement detection stop input section, or the proximity sensor (movement detection stop input section) continues to detect the presence of the user), for such a time period, the movement detection section ~~stops the movement of the pan~~ stops the detection of the movement of the pan or decreases the detection sensitivity, or even when the pan is moved, the control section performs the operation which is the same as or close to the usual operation.